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ABSTRACT

Basic geographic, demographic, economic, historical, and marketing facts and figures for cable television are presented in this short booklet. The data is succinctly arranged for easy reading and is intended to provide background information for state and local officials who might possibly be required to make public interest decisions in regard to cable television. (MC)

Cable Television
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PREFACE

This document was prepared by the Cable Television Information Center under grants from the Ford Foundation and the John and Mary R. Markle Foundation to The Urban Institute.

The primary function of the center's publications program is to provide policy makers in local and state governments with the information and analytical tools required to arrive at optimum policies and procedures for the development of cable television in the public interest.

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CONTENTS

NUMBER OF SYSTEMS 5
GROWTH OF CABLE 5
SIZE OF CABLE SYSTEMS 5
LOCATION OF CABLE SYSTEMS 5
ORIGIN OF CABLE 6
OWNERSHIP OF CABLE 6
COSTS OF CABLE 6
PROFITABILITY OF CABLE 7
CABLE SERVICE 7
CABLE PROGRAM ORIGINATION 7
TWO-WAY CABLE EXPERIMENTS 8

Cable Data

NUMBER OF SYSTEMS

About nine per cent of the television households in the U.S. are on the cable: an estimated six million households or 18.6 million viewers. As of July 1972, *Television Digest* counted 2,839 cable systems in operation, serving 5,328 communities. Franchises had been awarded for another 1,663 systems which have not begun operation. Applications for franchises were pending in another 2,729 communities.

GROWTH OF CABLE

Only about 19 per cent of approximately 15,000 potential cable markets have been wired. By 1980, however, the cable industry predicts that 5,000 systems will serve 25 to 30 million homes, with annual revenues of 4 billion dollars and a net worth of 15 billion dollars.

In the decade from 1961-71, the industry showed a 22 per cent compound growth rate in subscribers and a 14 per cent compound growth rate in number of systems (computed yearly on the basis of increases since the previous year).

The size of an average system nearly doubled.

SIZE OF CABLE SYSTEMS

Cable television systems range in size from under 50 to over 50,000 subscribers. In July 1972, the largest system was in San Diego, California, with 54,000 subscribers, followed by New York City's Sterling Manhattan system with 53,000. Others in the top five are New York City's TelePrompTer Manhattan system with 45,000 subscribers; the Allentown, Pennsylvania, system with 42,500; and the Northampton, Pennsylvania, system with 42,000.

The National Cable Television Association (NCTA) estimates the current average size of a cable TV system at 2,150 subscribers.

LOCATION OF CABLE SYSTEMS

All 50 states, Guam and the Virgin Islands have operating cable systems within their boundaries. Pennsylvania has the most: 300 systems serving three-quarters of a million subscribers. California ranks next with more than 250 systems, followed by New York with nearly 150. Ohio, Texas, Washington and West Virginia each have over 100 systems.

Cable has reached its greatest penetration in small towns and rural areas, 1971 figures from A.C. Nielson indicate. In the 25 largest metropolitan areas, 3.1 per cent of the TV homes were on the cable. In counties with over 150,000 population the cable penetration was 7.1 per cent. The greatest percentage of subscribers were in counties of 35,000-150,000 population (22.1%) and counties with less than 35,000 population (13.9%).

The communities with the highest percentage of cable subscribers are Palm Springs, California, with 67.7 per cent penetration; Elmira, New York, with 64.3 per

cent; and Santa Barbara–Santa Maria, California, with 63.1 per cent. (American Research Bureau, May 1972)

ORIGIN OF CABLE

The first coaxial cable was developed by Bell Laboratories in the late 1930's and was used for military communications during World War II. After the first CATV systems were built in eastern Pennsylvania and Oregon in 1949, engineers began to refine and improve coaxial cable and increase its channel capacity.

Coaxial cable is currently used in broadcast television and telephone systems, as well as cable television, for conducting high frequencies.

OWNERSHIP OF CABLE

About 42 per cent of the cable TV systems that were operating early in 1971 were owned by other media interests. Broadcasters owned 29.7 per cent of the systems, telephone companies owned 5.1 per cent, and publishing firms (newspapers and magazines) owned 6.8 per cent. (*Television Digest*) By federal law, television stations and telephone companies cannot own systems in their service areas and TV networks cannot own cable systems anywhere in the country.

The NCTA estimates that about 25 per cent of the nation's cable subscribers are served by individually-owned systems. Half the country's subscribers are served by systems owned by large cable groups.

In 1971, the top 10 multiple system owners (MSO's) served 34.1 per cent of all U.S. subscribers, an increase from 29.3 per cent in 1970. The top 25 MSO's served 51.8 per cent of all subscribers up from 46.7 per cent the year before.

Of all of the operating systems and awarded franchises, blacks own only part of the system in South Orange, New Jersey. Franchise applications and proposals call for partial or complete black ownership in Oakland, California; Dayton, Ohio; Washington, D.C. and Milwaukee, Wisconsin, among others. There are no known instances of cable ownership by Chicanos or other organized minority groups.

In about 35 small towns where the market could not attract private capital, citizens have established subscriber-owned cable systems. They serve from a handful to several hundred subscribers in each community.

There are also 18 municipally-owned systems in the U.S. Most of these are also in small cities, but municipal ownership has become a subject of interest in larger cities as well.

COSTS OF CABLE

The costs of building cable systems vary according to size, type of construction and population density. The Cable Television Information Center estimates that rural systems must pay $5,000 per mile for aerial cable, electronics and construction and $6,000-8,000 for underground construction (including cable and electronics). In cities, costs are likely to reach $6,000-8,500 per mile for aerial systems and $20,000-35,000 for underground construction outside the business district. Within the city core, prices run higher. New York City's underground construction cost nearly $100,000 per mile.

The most significant capital costs are for the distribution system itself. Component costs for a typical headend are: tower $12,000-30,000; building $2,000-8,000; VHF signal processor and antenna $2,750 per channel; UHF signal processor and antenna $3,250 per channel; microwave equipment $5,400 per channel; studio processing equipment $1,500 per channel; FM equipment $1,600; common equipment $5,500-6,700.

PROFITABILITY OF CABLE

A cable operation ordinarily cannot generate an attractive profit if the market's population is under 100 homes per mile; 150 homes is preferable. If the density falls below that figure, according to the Bank of New York, it may be advisable to regionalize the market.

In the past, a system has usually broken even at 20 per cent penetration of homes in the community, and created a profit at 40 per cent penetration.

A new system generally signs up 20-25 per cent of its potential subscribers in its first year of operation, and another 10 per cent in its second year. A system's equipment can be fully depreciated in 8-10 years, although the life of the hardware generally exceeds that.

The value of a cable TV system is usually based on its subscribers; a systems sells for between $300 and $500 per subscriber presently. Estimated annual revenues for the industry are $360 million.

Only three cable television systems are known to have gone out of business since the beginning of the industry.

CABLE SERVICE

The first CATV systems carried only one to three signals, then developed the capacity to carry five. In 1953, the industry introduced 12 channel capacity. Most systems being built today have at least a 20 channel capacity. The average channel capacity for all systems is 10.34, carrying an average of 7.3 broadcast signals.

Technological advances in the cable industry have made 30 channel cable possible when properly constructed or amplified. Systems also increase their channel capacity by using two cables laid side-by-side. The Federal Communications Commission (FCC) requires all new cable systems in the 100 largest television markets to have at least 20 channels.

In addition to broadcast television signals, many systems also offer FM radio over the cable.

In several cases, engineers are experimenting with 40 channel cable with two-way capability which will allow transmission as well as reception of messages.

CABLE PROGRAM ORIGINATION

By March 1971, 1,190 systems offered subscribers some sort of local programming. The bulk was automatic originations: the most popular feature was time and weather, followed by news tickers, music, and stock market tickers. 467 systems offered local live, taped or filmed programs, and 57 carried commerical advertising. 430 additional systems stated that local or automatic originations were being planned for the near future.

Capital costs of program origination vary with quality, not the size of the system. Minimum quality black and white facilities cost as little as $10,000, while a color system can cost over $100,000.

In 1972, the Supreme Court upheld an FCC ruling requiring non-automated program origination in systems with more than 3,500 subscribers.

Many recent efforts in locally originated programming have been related to education. For example:

- A 3 credit hour course in introductory psychology was cablecast from the State University College at New Paltz, New York, to 100 students who registered by mail and visited the campus only three times. The 24 lessons were scheduled

over 12 weeks with each lesson seen twice. A potential 10,000 students live in the mid-Hudson area of New York.

- 389 schools and junior colleges in San Diego County, California, will be interconnected by a microwave–CATV system costing over $2 million.
- The entire crew of State Cable TV in Augusta, Maine, consists of two high school students who earn $1.60 per hour, part-time, to film sports events and other local features for later cablecast.
- A cable TV seminar at the Indiana State Reformatory in Pendleton, Indiana, will teach prisoners math and basic electronics as part of a rehabilitory program for possible jobs in cable television.
- The Hagerstown, Maryland, school district has 42½ weekly hours plus 20-25 weekend hours of available time to cablecast to the surrounding community. Drawing upon 16 years of experience with its closed-circuit TV system, the school district plans on cablecasting adult education courses from the junior college, youth forum discussions, and sample classroom lessons to parents. The system has 6,700 subscribers.
- The Natrona County Public Library of Casper, Wyoming, has its own cable channel and is interconnected with the rest of the system to provide a "Video Reference Service" to the community. Subscribers phone in questions and the librarian answers over the channel.

Other programs of local origination include municipal services, commercial, or entertainment content:

- A 20-minute weekly show is written and produced by the Long Beach, California, Recreation Department which reviews development plans and construction schedules, interviews recreation staff, and gives walking videotape tours through the El Dorado Nature Center.
- The Colorado State Employment Department and the local cable operator cooperate to cablecast a job-information show which announces salary, experience, and other requirements of available jobs to subscribers.
- A two-hour shop-by-cable event in Pittsfield, Massachusetts, produced telephone orders for 52 TV sets and stero units for a local TV dealer. The system has a total of 11,500 subscribers.
- "Tree House Time," an award-winning children's program series, originates in Beloit, Wisconsin, and is seen ½ hour daily out of a total of 6-6½ hours of local programming per day for 7,730 subscribers. The show is then taped and sent to two other CATV systems in Eau Claire, Wisconsin, and Orlando, Florida.
- 45 volunteers in Reading, Pennsylvania, make videotapes of varied community interest from yoga lessons to violations in building constructions; the tapes are then shown in one-hour segments four times per week.

TWO-WAY CABLE EXPERIMENTS

As of July 1972, 18 two-way experimental cable systems had been counted in various cities across the country. In a two-way system, signals are sent from the headend via a computer to the terminal and upstream again to the headend by way of a separate cable or through different frequencies on the same cable. The sophistication of the two-way system depends upon the level of advancement of the terminal and the computer which processes the return information for later retrieval.

Current two-way technology breaks down into two developmental stages; 1. subscriber response, in which the subscriber feeds back digital responses to a computer which addresses each terminal in sequences; 2. complete audio/visual/digital return

which allows interaction with a computer which can handle random requests for information.

A typical subscriber terminal includes a standard television set with a converter and a 3-15 character keyboard which the subscriber uses to respond to questions or to initiate service. Costs for mass-produced terminals could range between $50-100 for voice and over $1,500 for voice plus video. Computer costs are still undetermined.

Most of the present two-way experiments have tested digital responses only.

In Orlando, Florida, 24 terminals, each equipped with a 10-character numeric keyboard and a separate switch for pay TV, were used in four mechandising experiments and one credit card verification test.

Six interactive services are planned for another digital two-way experiment in Jonathan, Minnesota. Terminals with 12-character keyboards will be initially installed in 50-100 buildings in the town. Estimated costs of wiring 1,000-1,500 buildings in Jonathan run to $4 million.

Digital responses testing pay TV, security alarm systems, and remote meter reading will occur in El Segundo, California, where 15 three-key and 15 ten-key terminals will be installed initially.

By the end of 1972, the 8-10 operators who service Irving, Texas, expect to have 1,500 terminals installed in the community. Burglar alarm, fire alarm, emergency help, and utility meter readings will be possible. Each terminal has a 5-character keyboard and switch for pay TV.

Three other experiments also tested audio-visual return and information retrieval.

Three homebound-handicapped children in Overland Park, Kansas were able to interact visually and aurally with a teacher and with each other using a standard TV set with a converter, a separate handset with 12 push buttons, and a microphone. The system will be expanded to 10 terminals. Other experiments on the system included opinion polling and shopping by TV.

The information retrieval system in Reston, Virginia, includes a 12-button Touch-Tone phone, a videotape recorder, a standard TV set, and a special coupler/decoder in the subscriber home. Since videotape recorders cost $300 per unit, silicon storage tubes which cost $10 per unit may be used to "frame grab" information called from the computer. By January 1974, a computer-aided instruction system (CAI), based on the Reston experiment, will be tested in two junior colleges with 128 terminals.

200 homes in Dennisport, Massachusetts, used dial selectors rather than keyboard terminals to select from 12 available channels. This random-dial-access demonstration allowed subscribers to see grocery prices posted at a local store.